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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,534	01/12/2006	Lukas Haener	22415-00004-US	1837
30678 7590 07/23/2008 CONNOLLY BOVE LODGE & HUTZ LLP 1875 EYE STREET, N.W. SUITE 1100 WASHINGTON, DC 20036				
EXAMINER VU, JIMMY T				
ART UNIT 2821		PAPER NUMBER		
MAIL DATE 07/23/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/564,534

## Applicant(s)

HAENER ET AL.

## Examiner

JIMMY T. VU

## Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4 and 6-8 is/are rejected.
- 7) ☒ Claim(s) 3, 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/11/2008 has been entered.

2. In virtue of RCE filed on 07/11/2008, claims 1-4 and 6-10 are pending in the application.

### ***Response to Arguments***

3. Applicant's arguments, filed 07/11/2008, with respect to the rejection(s) of claim(s) 1-4 and 6-8 have been fully considered and are persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior arts of Haavisto (U.S. Patent 6,320,330 B1) and Johnson (U.S. Patent 6,798,801 B2) as below.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Haavisto (U.S. Patent 6,320,330 B1).

Regarding claim 1, Haavisto discloses a device (Figs. 3-6) for lighting at least one light emitting diode (LED) (IL) (Figs. 3, 4 and 6) to be supplied with predefined minimum forward voltage (operating voltage, i.e. 3.6V, as in col. 2, line 62, col. 3, lines 38-40) and maximum current, comprising:

a battery (voltage source Batt, Fig. 3) having a voltage ( $V_{\text{Batt}}$ , Fig. 4) less than said predefined minimum forward voltage (battery with 3 V is less than forward voltage 3.6 V, col. 2, lines 62-63) for supplying voltage to the light emitting diode (IL),

a pulse generator (PWM is used in the form of PFM (col. 11, lines 3-5) for generating a cyclic pulse signal (Fig. 5) having predefined on-times and off-times (as on/off times in Fig. 5),

a switch (SW) (Figs. 3, 4 and 6) controlled by the pulse generator to be turned on during said on-times to short-circuit the light emitting diode and turned off during said off-times (Fig. 5),

an inductive device (L) (Figs. 3, 4 and 6) for being charged when the switch is turned on (current pass through the coil when the switch is conducting/on; it means the coil L is being charged, Fig. 5, col. 9, lines 63-67, col. 10, lines 1-3) and for increasing the forward voltage over the light emitting diode when the switch is turned off (Fig. 5, col. 10, lines 40-61 shown that when the switch is off, the coil is discharge by the

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current  $I_A$  through the LEDs at a voltage equal in size to their combined forward voltage. To be more specific,  $V_{fw}$  is the sum of the forward bias voltages of the LEDs, refer to col. 10, lines 40-46).

wherein the pulse generator is a pulse width modulation generator (PWM is used in the form of PFM, col. 11, lines 3-5).

Regarding claim 2, Haavisto discloses a device comprising a diode (D, Fig. 4) before the light emitting diode (IL) to prevent the voltage over the light emitting diode from going down to zero.

Regarding claim 4, Haavisto discloses a device wherein the cyclic pulse signal has a frequency from 0.1 kHz to 30 Mega hertz (col. 1, lines 15).

Regarding claim 7, Haavisto discloses a battery-supplied apparatus (Figs. 1,3, 4, 6) comprising a display (col. 1, lines 10-15) and a device as claimed (battery-operated electronic device, col. 1, lines 9-10) for backlighting said display (as background display illumination, col. 1, lines 24-25).

Regarding claim 8, Haavisto discloses the method of lighting at least one light emitting diode (IL) (Figs. 3, 4 and 6) to be supplied with predefined minimum forward voltage and maximum current, comprising the steps of:

supplying a forward voltage to the light emitting diode (operating voltage, i.e. 3.6V, as in col. 2, line 62, col. 3, lines 38-40) (To be more specific, the forward voltage is applied to the LEDs through the output of element L), using a battery (voltage source Batt, Fig. 3) having a voltage ( $V_{Batt}$ , Fig. 4) less than said predetermined minimum

forward voltage (battery with 3 V is less than forward voltage 3.6 V, col. 2, lines 62-63), using a pulse width modulator (PWM is used in the form of PFM, col. 11, lines 3-5) to generate a cyclic pulse signal having predefined on-times and off-times (as on/off times in Fig. 5) for controlling a switch (SW, Figs. 3, 4 and 6) to be turned on during said on-times to short-circuit the light emitting diode and turned off during said off-times (Fig. 5),

charging an inductive device (coil L, Figs. 3-6) when the switch (SW) is turned on (current pass through the coil when the switch is conducting/on; it means the coil L is being charged, Fig. 5, col. 9, lines 63-67, col. 10, lines 1-3),

increasing the forward voltage over the light emitting diode when the switch is turned off so that said forward voltage gets higher than the minimum forward voltage (Fig. 5, col. 10, lines 40-61 shown that when the switch is off, the coil is discharge by the current  $I_A$  through the LEDs at a voltage equal in size to their combined forward voltage. To be more specific,  $V_{fw}$  is the sum of the forward bias voltages of the LEDs, refer to col. 10, lines 40-46).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haavisto (U.S. Patent 6,320,330 B1) in view of Johnson (U.S. Patent 6,798,801 B2).

Regarding claim 6, Haavisto discloses all of the limitations as claimed except the switch is a MOS FET. However, as evidenced by Johnson, providing a MOS FET (M3 518, Fig. 5, col. 4, line 55) is well known in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide the apparatus of Haavisto with the MOS FET switch as taught by Johnson in order to timely control the current/voltage flow into the LEDs in controlling brightness of the illumination.

#### ***Allowable Subject Matter***

8. Claims 3, 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art teaches or fairly suggests a device and method wherein "the inductive device is a coil having an inductance defined by the number of light emitting diodes and their maximum current and voltage requirements as well as the available frequency of the pulse generator" (claim 3), and "said device is adapted to regulate the current over the light emitting diode by pre-defining the timing of the pulse signal that determines the charge on the inductive device, wherein the maximum on-time keeps the current of the inductive device not higher than the maximum current allowed through the

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light emitting diode, and the off time is chosen so that the current on the inductive device will decrease to zero” (claims 9 and 10).

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy T Vu whose telephone number is (571) 272-1832. The examiner can normally be reached on M - F: 9 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on (571) 272-1662. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2800.

Jimmy Vu

July 18, 2008

/Douglas W Owens/  
Supervisory Patent Examiner, Art Unit 2821  
July 20, 2008